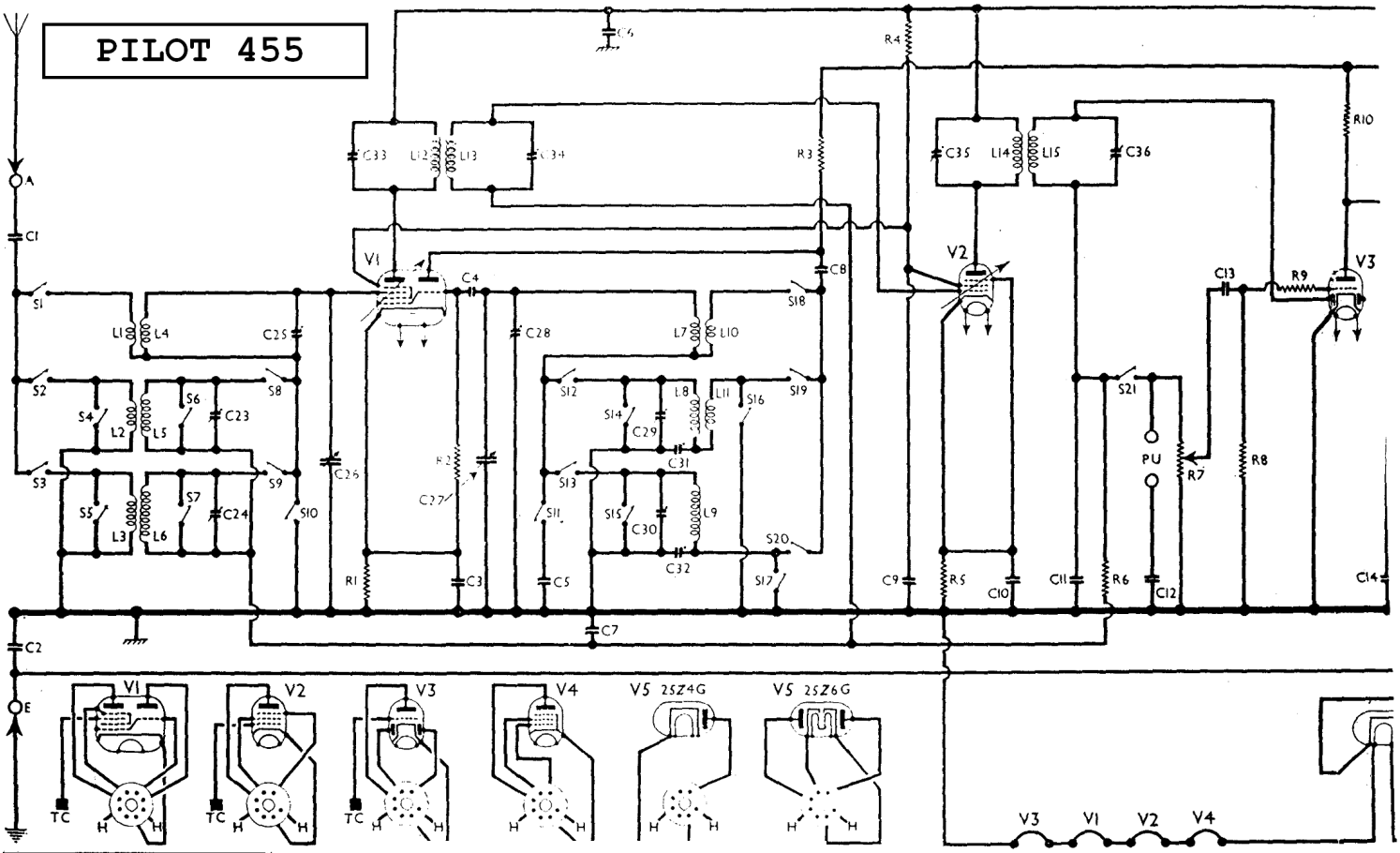
PILOT 455



CONDENSERS		Values (μF)
C1	Aerial isolating condenser	0·0001
C2	Earth isolating condenser	0·025
C3	V1 cathode by-pass	0·05
C4	V1 osc. CG condenser	0·00006
C5	Osc. circuit SW tracker	0·006
C6	HT circuit RF by-pass	0·05
C7	AVC line decoupling	0·05
C8	V1 osc. anode coupling	0·00015
C9	V1, V2 SG's decoupling	0·05
C10	V2 cathode by-pass	0·05
C11	IF by-pass	0·00015
C12	PU isolating condenser	0·025
C13	AF coupling to V3 triode	0·001
C14	IF by-pass	0·0004
C15	Part of variable tone control	0·01
C16	V3 triode to V4 AF coupling	0·01
C17*	V1 osc. anode, V3 triode anode and V4 SG decoupling	8·0
C18*	V4 cathode by-pass	25·0
C19	Fixed tone corrector	0·002
C20*	HT smoothing condensers	8·0
C21*	HT smoothing condensers	16·0
C22	Mains RF by-pass	0·1
C23†	Aerial circuit MW trimmer	0·00005
C24†	Aerial circuit LW trimmer	0·00014
C25†	Aerial circuit SW trimmer	0·00003
C26†	Aerial circuit tuning	—
C27†	Oscillator circuit tuning	—
C28†	Osc. circuit SW trimmer	0·00004
C29†	Osc. circuit MW trimmer	0·00005
C30†	Osc. circuit LW trimmer	0·0002
C31†	Osc. circuit MW tracker	0·0007
C32†	Osc. circuit LW tracker	0·0003
C33†	1st IF trans. pri. tuning	—
C34†	1st IF trans. sec. tuning	—
C35†	2nd IF trans. pri. tuning	—
C36†	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

RESISTANCES		Values (ohms)
R1	V1 fixed GB resistance	220
R2	V1 osc. CG resistance	47,000
R3	V1 osc. anode HT feed	33,000
R4	V1, V2 SG's HT feed	33,000
R5	V2 fixed GB resistance	220
R6	AVC line decoupling	1,000,000
R7	Manual volume control; V3 signal diode load	1,000,000
R8	V3 triode CG resistance	9,500,000
R9	V3 triode grid stopper	47,000
R10	V3 triode anode load	270,000
R11	Variable tone control	1,000,000
R12	V4 CG resistance	270,000
R13	V1 osc. anode, V3 triode anode and V4 SG HT feed	4,700
R14	V4 GB resistance	470
R15	V5 anode surge limiter	100
R16	Scale lamps shunt resistance, total	120*

* Tapped at 40 Ω intervals.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial SW coupling coil	1·0
L2	Aerial MW coupling coil	20·0
L3	Aerial LW coupling coil	100·0
L4	Aerial SW tuning coil	Very low
L5	Aerial MW tuning coil	1·4
L6	Aerial LW tuning coil	16·0
L7	Osc. circuit SW tuning coil	Very low
L8	Osc. circuit MW tuning coil	0·6
L9	Osc. circuit LW tuning coil	16·0
L10	Osc. SW reaction coil	0·1
L11	Osc. MW reaction coil	0·8
L12	1st IF trans. Pri.	3·5
L13	1st IF trans. Sec.	3·5
L14	2nd IF trans. Pri.	11·0
L15	2nd IF trans. Sec.	11·0
L16	Speaker speech coil	1·4
L17	HT smoothing choke	390·0
L18	Mains filter chokes	5·5
L19	Mains filter chokes	5·5
T1	Speaker input trans. Pri.	330·0
T1	Speaker input trans. Sec.	0·3
S1–S20	Waveband switches	—
S21	Radio muting switch	—
S22	Speaker muting switch	—
S23	Mains switch, ganged R11	—

CIRCUIT ALIGNMENT

IF Stages.—Switch set to MW, and turn gang to maximum. Connect signal generator leads via a 0.1 μF non-inductive condenser to the control grid (top cap) of **V1** hexode and the earth lead clip.

Feed in a 451 KC/S (665.2 m) signal, and adjust **C36, C35, C34** and **C33** in that order for maximum output. Repeat these adjustments until no further improvement can be obtained.

If a whistle appears as the circuits are brought into tune, alter the position of the gang slightly, until the whistle disappears.

RF and Oscillator Stages.—With the gang at minimum, the pointer should coincide with the short vertical lines at the extreme left-hand ends of the three scales. Connect the signal generator to the **A** and **E** leads via a suitable dummy aerial.

SW.—Switch set to SW, and tune to 16.8 m on scale. Feed in a 16.8 m (17.8 MC/S) signal, and adjust **C28,** then **C25,** for maximum output. Repeat these adjustments very carefully. There is no variable tracking on this band, but the setting should be checked at 49 m.

MW.—Switch set to MW, and tune to 214 m on scale. Feed in a 214 m (1,400 KC/S) signal, and adjust **C29,** then **C23,** for maximum output.

Feed in a 500 m (600 KC/S) signal, tune it in, and adjust **C31** for maximum output while rocking the gang for optimum results. Repeat the 214 m adjustments.

LW.—Switch set to LW, and tune to 1,100 m on scale. Feed in a 1,100 m (272.5 KC/S) signal, and adjust **C30,** then **C24,** for maximum output.

Feed in a 1,900 m (158 KC/S) signal, tune it in, and adjust **C32** for maximum output while rocking the gang for optimum results. Repeat the 1,100 m adjustments.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on AC mains of 233 V.

Valve		Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1	6K8G	195	0·8	60	3·5
		Oscillator 63	2·6		
V2	6U7G	195	4·0	60	1·2
V3	6Q7G	46	0·35	—	—
V4	25A6G	182	36·0	148	7·1
V5	25Z4G	217†	—	—	—

† Cathode to chassis, DC.

The receiver was tuned to the lowest wavelength on the medium wave band, and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

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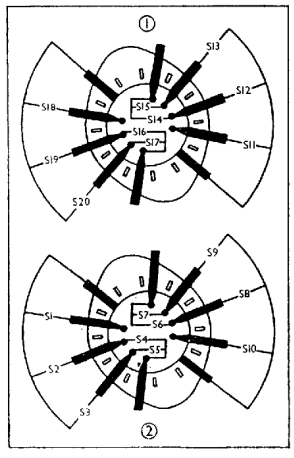
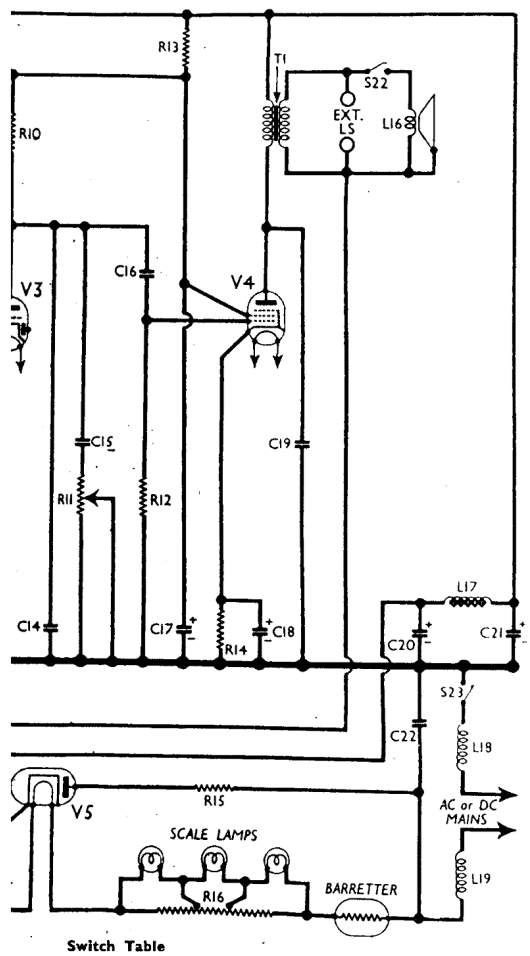
Feed in a 1,900 m (158 KC/S) signal, tune it in, and adjust **C32** for maximum output while rocking the gang for optimum results. Repeat the 1,100 m adjustments.



Diagrams of the two switch units, viewed in the direction of the arrows in the under-chassis view.



Switch Table

Switch	SW	MW	LW
S1	C	—	—
S2	—	C	—
S3	—	—	C
S4	C	C	—
S5	C	C	—
S6	C	C	—
S7	—	C	—
S8	—	C	C
S9	—	—	C
S10	C	—	—
S11	C	—	—
S12	—	C	—
S13	—	—	C
S14	C	C	—
S15	C	C	—
S16	—	C	—
S17	C	C	—
S18	—	—	C
S19	—	—	C
S20	—	—	C